

**Interim
Implementation Plan
Regarding Section 526 of the
Energy Independence and Security Act of 2007**



Defense Energy Support Center

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From the Director

August 19, 2009

Today is an exciting time for the Defense Energy Support Center as we expand our mission to provide renewable and alternative energy to satisfy our customers' needs. Through our core mission of energy support, we provide products and services that are essential to our Military and Federal Civilian customers. As our nation continues to embrace energy conservation, energy security, and a renewed awareness of environmental concerns, including climate change, DESC will play a prominent role in meeting these challenges.

Under Section 526 of the Energy Security and Independence Act of 2007, DESC can contract for alternative and synthetic mobility related fuels so long as they have lifecycle greenhouse gas emissions less than or equal to conventional petroleum. DESC is issuing this Interim Implementation Plan to provide guidance to our workforce, suppliers, and customers on how DESC will comply with Section 526 and we hope to issue the final plan next fiscal year.

As we move forward, we will continue to provide the DoD and other government agencies with comprehensive energy solutions in the most effective and efficient manner possible-maintaining our position as our customer's first choice for energy solutions.



Kim J Huntley
Director
Defense Energy Support Center

Summary
Defense Energy Support Center Implementation Plan
Regarding Section 526 of the Energy Independence and Security Act of 2007

The Defense Energy Support Center's (DESC) mission is to provide the Department of Defense (DoD) and other government agencies with comprehensive energy solutions in the most effective and efficient manner possible. Because DESC contracts for fuel and other types of energy on behalf of the federal government, DESC has taken the lead in developing this implementation plan.

The Energy Independence and Security Act of 2007, was established to “move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.” Preamble, Pub. L. 110–140, December 19, 2007. Section 526, Procurement and Acquisition of Alternative Fuels, provides as follows:

No Federal agency shall enter into a contract for procurement of an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources, for any mobility-related use, other than for research or testing, unless the contract specifies that the lifecycle greenhouse gas emissions associated with the production and combustion of the fuel supplied under the contract must, on an ongoing basis, be less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.

Implementing this law has proved challenging. Because the statute contains no definitions, DESC relied on the most commonly used statutory definitions, commercial usage, and DESC's extensive corporate knowledge and experience with energy commodities in developing this implementation plan. There is also no regulation, industry standard or scientific consensus for measuring lifecycle greenhouse gas emissions. Under this plan, DESC will use the best data available regarding lifecycle greenhouse gas emissions for the various fuels.

This implementation plan groups the fuels into three categories: alternative fuels, petroleum, and synthetic fuels. It then identifies actions necessary to determine whether the fuels meet the requirements of Section 526, and which DESC contracts will be affected.

Alternative Fuels: DESC identified E85 ethanol and B20 biodiesel as the primary alternative fuels under DESC contracts. These fuels constitute only .09% of the total DESC fuel purchases. Based on Environmental Protection Agency publications, DESC concluded that all of these fuels have lifecycle greenhouse gas emissions less than petroleum and therefore, DESC contracts for these fuels would be in compliance with Section 526.

Petroleum: Most of DESC purchases are petroleum products. These consist of aviation fuels, marine distillate fuels, heating oil, gasoline and diesel fuels, purchased worldwide. This implementation plan addresses petroleum because the petroleum produced from oil sands crude oil might be considered “an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources” under Section 526.

DESC concluded that its contracts for petroleum were not covered by Section 526 because DESC is purchasing commercially available fuels, consistent with acquisition policy. The amount of oil sands crude mixed with conventional crude oil is not substantial and is part of the normal crude oil distribution systems. DESC contracts do not target any particular source of crude oil nor do they specify that the refined products must be produced from oil sands crude oil. The DESC contracts do not direct or reimburse the contractor for any refinery changes or upgrade to permit the refining of oil sands crude. In addition, because it is almost impossible to purchase fuel which contains no oil sands as its crude source, attempting to exclude oil sands crude from purchases of refined products would increase costs and compromise readiness by eliminating needed sources of supply.

Synthetic fuels: Synthetic fuels are generally considered to be fuels produced from non petroleum feedstocks such as coal, natural gas or biomass, or a combination thereof. Fuels produced by the Fischer-Tropsch (F-T) process using the above feedstocks are considered to be synthetic fuels, although there are other types of processes for making synthetic fuels. When DESC buys synthetic fuel for operational uses, DESC will work with the scientific community to determine the best measurement method in order to ensure that the fuel purchased meets the requirements of Section 526. Appendix A contains an explanation of what is involved in measuring the lifecycle greenhouse gas emissions and a summary of the current work underway.

Lastly, the plan identifies some exceptions to Section 526, such as small purchases, overseas and contingency purchases, emergencies or sole source situations, that are needed to meet DoD’s operational requirements for fuel.

I. Introduction

The Defense Energy Support Center's (DESC) mission is to provide the Department of Defense (DoD) and other government agencies with comprehensive energy solutions in the most effective and efficient manner possible. Because DESC contracts for fuel and other types of energy on behalf of the federal government, DESC has taken the lead in developing this implementation plan.

DESC's largest purchases are petroleum products. In FY 2008, DESC purchased 5.7 billion gallons of fuel world wide, which included aviation fuels, marine distillate fuels and ground products such as heating oil, diesel and gasoline. In contrast, DESC purchased only 1.5 million gallons of E85 ethanol and 6.6 million gallons of B20 biodiesel. Since 2006, DESC has purchased 676,000 gallons of synthetic fuel to support the Air Force's testing and certification programs.

For all of its procurements, DESC follows standard procurement procedures as required in the Federal Acquisition Regulation (FAR) and the Defense Federal Acquisition Regulation Supplement (DFARS). DESC uses the commercial contracting procedures found in Part 12 of the FAR and DFARS. Almost all contracts are solicited using full and open competitive procedures and are awarded based on price. All the petroleum based fuel contracts contain economic price adjustment provisions, using market based industry publications.

All of the petroleum fuels DESC purchases are commercial items under FAR Part 12. DESC relies on industry practices and standards for manufacture, delivery, inspection, and acceptance of the fuels. All petroleum and alternative fuels are purchased under commercial or military specifications. The military specification fuel differs in only a few parameters from the commercial counterpart, such as flash point, freeze point and some special fuel additives. More importantly, the military specification fuel is produced in the same refineries by the same methods as other commercial petroleum products. In addition, the same refineries which are producing military specification product for DESC are producing commercial products at the same time.

The Energy Independence and Security Act of 2007 (EISA), Public Law 110–140, December 19, 2007, was established to “move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.”

Section 526, Procurement and Acquisition of Alternative Fuels (codified at 42 U.S.C. § 17142) provides as follows:

No Federal agency shall enter into a contract for procurement of an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources, for any mobility-related use, other than for research or testing, unless the contract specifies that the lifecycle greenhouse gas emissions associated with the production and combustion of the fuel supplied under the contract must, on an ongoing basis, be less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.

Because there were no definitions included with Section 526, DESC relied on the most commonly used statutory definitions, commercial usage, and DESC's extensive corporate knowledge and experience with energy commodities in developing this implementation plan. In addition, Section 526 only covers fuels for "mobility related use." Thus, Section 526 covers most liquid fuels purchased by the federal government for ground, aviation, and marine uses. It would not cover home heating oil and diesel used in ground equipment nor would it cover electricity and natural gas used in buildings or power plants on installations.

With respect to measuring the lifecycle greenhouse gas (GHG) emissions of the fuels, although there are many studies and methods, there is no single standard. The Environmental Protection Agency (EPA) just recently on May 5, 2009, issued a Notice of Proposed Rulemaking for the Renewable Fuels Standard Program pursuant to EISA which, among other things, includes new GHG emission thresholds for renewable fuels.¹ The Aviation Fuel Life Cycle Assessment Working Group, headed by the Air Force and composed of members from government agencies, universities and companies, is developing a guidance document to define the life cycle assessment methodologies and data required for generating the emissions information on specific fuels at specific locations from defined feedstocks. Attachment A provides a description of lifecycle greenhouse gas emissions, the various standards and models, and efforts underway to measure them.

This implementation plan identifies the fuels covered by Section 526, divided into three categories: alternative fuels, petroleum, and synthetic fuels. Although DESC recognizes that synthetic fuel is a type of alternative fuel, this plan discusses synthetic fuels separately because Section 526 refers to "alternative or synthetic fuels" and because DESC is not routinely contracting for synthetic fuels and will need to set up separate contracting procedures to comply with Section 526 for synthetic fuels. The implementation plan then identifies the standard that will be used to judge whether the lifecycle GHG emissions of the fuel is less than or equal to that of conventional petroleum. If there is no standard, DESC will use the best information available at the time of contracting. As standards are developed, DESC will adopt them in this implementation plan. The plan then describes any actions necessary to implement Section 526 with respect to contract awards and contract terms and conditions. The plan identifies some exceptions to Section 526 that are necessary in order to meet DoD's operational requirements for fuel. The plan recognizes the many and varied contract

types DESC uses to obtain fuel, the worldwide scope of the contracts, and considers the operational impacts on DoD and federal civilian agencies.

II. Alternative Fuels²

The Federal fleet uses the following alternative fuels as reported in the Federal Fleet Report FY 2007³: B20 and B100 biodiesel, E85 ethanol, liquefied natural gas (LNG), compressed natural gas (CNG), liquefied petroleum gas (LPG) and electricity. Of these fuels, DESC purchases only E85 ethanol and B20 biodiesel under long term contracts for its DoD and federal civilian customers. Some federal civilian agencies may also contract for E85 ethanol and B20 biodiesel. The remaining alternative fuels are purchased under either written contracts or with fleet purchase cards.

A. Types of Fuels

1. E85 ethanol and B20 biodiesel

E85 is defined as an alternative fuel by the Energy Policy Act of 1992 (EPAct).⁴ B20 is not defined as an alternative fuel by EPAct but federal fleets may earn fleet acquisition credit for use of B20.⁵ Although B20 is not defined as an alternative fuel in EPAct, the constituent parts of B20 (diesel and B100) are separately counted in calculating Federal fleet compliance with EPAct and E.O. 13423.⁶ Nonetheless, B20 is generally referred to as an alternative fuel and is the most widely used biodiesel blend in the United States.⁷ For purposes of determining Section 526 compliance, it is reasonable to consider B20 as an alternative fuel.

Ethanol is an alcohol made from renewable resources such as corn and other cereal grains, food and other beverage wastes and forestry by-products. Ethanol can be blended with gasoline to make a motor fuel; E85 is the blend of 85% ethanol and 15% gasoline. E85 can **only** be used in flexible fuel vehicles. E85 has only 72% of the energy content as gasoline and, therefore, a vehicle will use 30% more E85 than gasoline for the same number of miles traveled. E10 (commonly referred to as gasohol) is another blend, with 10% ethanol and 90% gasoline, and can be readily substituted for gasoline in any commercial engine. However, E10 is not defined as an alternative fuel and the 10% ethanol component is simply used as an oxidation additive to replace methyl tertiary butyl ether (MTBE).⁸

Biodiesel is currently produced from a number of renewable sources including soybean oil, rapeseed oil, animal fats, recycled cooking oil, and others. These sources can be obtained from agricultural feedstocks, or recycled cooking oil or grease. DESC purchases a biodiesel blend, B20, which contains 20 percent biodiesel blended with 80 percent diesel. B20 has high energy content, 98.2% of the energy content of diesel.⁹

Federal agencies are required to increase their use of alternative fuels by 10% annually through FY2015, using FY2005 as the baseline year per Executive Order 13423, which implements the energy management requirements of the Energy Policy Act of 2005.

The two primary alternative fuels currently used to substitute for gasoline and diesel to meet these goals are E85 and B20.¹⁰

Both E85 and B20 are normally purchased under long term contracts, 3-5 years, by the DESC direct delivery fuels program. Under these free on board (FOB) destination contracts, the contractor is required to deliver the fuels to the various locations as required throughout the life of the contract. The transportation delivery costs are included in the price of the fuel. The fuels are governed by commercial specifications. The contractor may provide fuels from any source so long as they meet the specifications of the contract.

DESC also uses simplified acquisition procedures for smaller purchases under the simplified acquisition threshold of \$100,000 or the test program for commercial items, with a threshold of \$5.5 million. These procedures are usually used for emergency purchases to support a customer if a regular contractor fails to deliver. Under these circumstances, DESC competes the purchase to the extent possible and issues a purchase order to the vendor, which then accepts the offer by delivering the fuel.

DESC contracts for E85 and B20 for both military and federal civilian customers. DoD permits the use of these fuels only in non-tactical vehicles. DESC has 67 contracts in place which cover 22 locations for E85 and 163 locations for B20.¹¹ Under its long term contracts, DESC purchased 8.1 million gallons of both fuels for military customers.¹² These purchases are .09 % of the total DESC fuel purchases. Although DESC contracts for these fuels for the federal civilian agencies, the federal civilian agencies directly order and pay for the fuels under contract and thus DESC does not maintain records of those purchases.

The Federal Fleet Report consumption data by each federal agency for the alternative fuels shows that the entire federal government consumed 13.3 million gasoline gallon equivalents of E85 and B20. These numbers are reported in gasoline gallon equivalents in order to compare different types of fuels and their different energy content with one another. The fleet report consumption data and the DESC contract purchase data will not directly correspond because DoD does not consume all the fuel it purchases under its contracts; some of the DoD purchased fuel is held in stock and resold to federal agencies. Nonetheless, this consumption data provides useful information regarding the federal demand for E85 and B20. These two fuels together constitute 3.5% of the total federal fleet consumption.

2. B100 biodiesel, liquefied natural gas (LNG), compressed natural gas (CNG), liquefied petroleum gas (LPG) and electricity

DESC does not purchase any of the above fuels for vehicle or mobility fuel purposes. These fuels are purchased by other DoD or federal civilian agencies under either written contracts or with fleet cards. By consumption, these fuels make up 10.3 million gasoline gallon equivalents and equal 2.7% of the total federal fleet consumption. All of these fuels are all considered alternative fuels under EPAct.

3. Alternative fuels now under development

There is considerable research to develop second generation biofuels that would include ethanol based fuels from sources other than corn and fuels produced from algae oil and other biomass feedstocks. Prior to contracting for any alternative fuel now under development, DESC will review the lifecycle GHG emissions of the fuel based on then current information and standards for measuring lifecycle GHG emissions. If the fuel was determined to be in a category similar to E85 ethanol or B20 biodiesel, in which all the fuel in that category met the requirements of Section 526, then DESC would make a determination for the entire class of fuel. If the lifecycle GHG emissions of the fuel were dependent on the feedstock, energy usage, manufacturing processes, and land use impacts, then DESC would adopt the procedures for synthetic fuel as described below in Section III.

B. Standard for measuring lifecycle GHG emissions of E85 and B20 compared to gasoline and diesel

Section 526 requires that the lifecycle GHG emissions of alternative fuels be less than or equal to the lifecycle GHG emissions of equivalent conventional petroleum in order for the federal government to contract for the fuel. In this case, the E85 ethanol is a substitute for gasoline and B20 biodiesel is a substitute for diesel. The EPA Office of Transportation and Air Quality has published information regarding the lifecycle GHG emissions of alternative fuels in its Emission Facts, Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use, EPA420-F-07-035, April 2007 (EPA Emission Facts).¹³ This Fact Sheet concluded that the lifecycle GHG emissions of biodiesel and ethanol were less than conventional petroleum. Although E85 and B20 are both blends, as long as the lifecycle GHG emissions of the blended portion is less than or equal to the lifecycle GHG emissions of petroleum, the lifecycle GHG emissions for the blended fuel will also be less than the lifecycle GHG emissions of the petroleum product, such as gasoline or diesel fuel in this case.

In addition, as part of its proposed revisions to the National Renewable Fuel Standard (RFS) Program, EPA published a fact sheet titled “Technical Highlights, EPA Lifecycle Analysis of Greenhouse Gas Emissions from Renewable Fuels” for ethanol and biodiesel produced under varying conditions.¹⁴ In almost all cases, ethanol and biodiesel resulted in fewer GHG emissions than the defined petroleum baseline. Therefore, based on this information, E85 and B20 fuels will likely have lifecycle GHG emissions that are less than or equal to petroleum.

The RFS would not apply to the other alternative fuels used by the federal fleet because they are not renewable fuels. However, based on the EPA Emission Facts from 2007, all the other alternative fuels used by the federal fleet including liquefied natural gas, compressed natural gas, liquefied petroleum gas, and electricity, have lifecycle GHG emissions that are less than petroleum. The EPA Emissions Fact Sheet calculated the GHG emissions by class of fuel. Thus, DESC will implement Section 526 with respect to alternative fuels by category of fuel rather than requiring each supplier to specify that the fuel produced by a particular facility meets the standard.

The EPA Emission Facts are based on the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model developed by the Argonne National Laboratory. However, the Proposed EPA rulemaking for the RFS uses a variety of models and data sources.¹⁵ DESC will periodically review the available information regarding measurement of lifecycle GHG emissions and revise this part of the implementation plan if new data indicates that the lifecycle GHG emissions of alternative fuels will exceed those from conventional petroleum.

C. Contractual action to be taken with respect to Alternative Fuels

Annually, DESC will execute a blanket determination and findings that lifecycle GHG emissions of all E85 and B20 are less than or equal to the lifecycle GHG emissions of conventional petroleum. DESC will include a provision in all contracts for E85 and B20 stating that DESC has made this finding so that the contract complies with Section 526 by specifying that the lifecycle GHG emissions are less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources. DESC will issue a DESC Informational Contracting Instruction (CI) regarding Section 526 in order to provide direction on contracts for alternative fuels, such as E85 and B20. This CI will also contain instructions on contracting for alternative fuels now under development to ensure the contracts meet the requirements of Section 526.

III. Petroleum

Most of DESC purchases are petroleum products. These consist of aviation fuels, marine distillate fuels, heating oils, gasoline and diesel fuels. For the federal civilian customers, these purchases are largely domestic. However, the products are purchased worldwide for the military services and other DoD customers. For example, DoD sells fuel to DoD contractors, such as the airline carriers who transport goods for DoD, and provides fuel under international agreements to other countries.

DESC purchases petroleum under two separate acquisition programs. The large bulk fuel contracts are normally one year contracts, usually for military specification fuels such as JP-8 and JP-5 aviation fuel and F76 marine distillate fuel. DESC purchased 4.2 billion gallons of these fuels under the bulk petroleum program in FY 2008. Most of these contracts are FOB origin, which means the government takes title to the fuel directly from the refinery. The fuel is typically moved by tanker, barge, pipeline, or tank truck. The bulk contracts do not target any particular source of crude oil nor do they specify that the refined products must contain any amount of fuel refined from oil sands crude oil. The contracts do not support or provide incentives for a refinery upgrade or expansions to allow the increased refining of crude produced from oil sands. The main requirement is that the fuels meet the fuel specifications in the contract.

Under the direct delivery fuels program, DESC contracts for fuel to be delivered directly to the military base or federal location for products such as heating oil, diesel and gasoline. These contracts are typically 3-5 years in duration. DESC purchased 1.1 billion gallons of fuel under this program in FY 2008. These contracts are for smaller quantities of fuel but are FOB destination, which means the cost of transportation is

included in the price. There are also contracts for commercial fuel to be supplied at airports and sea ports. These fuels are normally procured against commercial specifications. DESC usually obtains these fuels from dealers, rather than directly from the refineries. As such they are fungible products available in the local market place for the locations supplied. As in the bulk fuel program, these contracts also do not direct or target the source of the crude feedstocks used in these refined products.

Contracts under both of the above programs are issued under routine procedures with sufficient procurement lead time to allow for full and open competition. DESC also contracts using emergency and sole sources procedures to meet customer requirements when it cannot use its routine full and open competitive procedures.

This implementation plan addresses petroleum because it might be considered “an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources” under Section 526. If the term “alternative” fuel were defined solely based on EPCRA, petroleum would not be covered because petroleum is not included in the list of identified fuels. Furthermore, new fuels can be added to the list only if they are “substantially not petroleum.”¹⁶

However, in Section 526, the term “alternative” fuel, includes “a fuel produced from nonconventional petroleum sources.” Therefore, this creates a question of what is a nonconventional (or more commonly referred to as unconventional) petroleum source and more specifically, whether heavy crudes imported from Venezuela and oil sands crude imported from Canada would be considered “nonconventional petroleum sources” under Section 526. The American Society of Testing and Materials (ASTM) Standard for refined petroleum products considers crude oil, natural gas, liquid condensates, heavy oil, shale oil, and oil sands to be conventional petroleum.¹⁷ DoE categorizes heavy crudes and oil sands crudes as nonconventional because the extraction process for these crude require heat processes and are not typical of extracting liquid petroleum crude.¹⁸

DESC recently sponsored a study to determine how much of its bulk petroleum purchases in the United States contained some heavy crude from Venezuela and oil sands crude from Canada.¹⁹ The study identified 44 suppliers which had done business with DESC. Of this number, the study concluded that only six suppliers were likely to have refined more than 2% of crude which had been extracted from oil sands. The study also noted that the refineries doing business with DESC are representative of other US refineries. Therefore, DESC could not avoid oil sands crude by purchasing from other refineries.

The study also noted that although the crude oil from oil sands constitutes only 10 percent of the total amount of crude refined in the US, it was widespread in all the US markets due to the extensive crude oil pipeline distribution network in Canada and the United States. Crude oils were also intermingled in transit and blended with other crudes at the refineries on a routine basis. Therefore, even when DESC purchased fuel directly from a refinery, it would be difficult and expensive to purchase fuel which contained no Canadian oil sands crude.

Although the study did not address the commercial products purchased in the direct delivery program, DESC can draw some logical conclusions with respect to the presence of oil sands derived products in the direct delivery program. In addition to the comingling of the crudes, the refined products are also blended in commercial distribution pipelines and storage tanks after refining. These commercial products are extremely fungible and widely distributed. The dealers which supply these products to DESC can obtain their fuels from multiple sources of supply. The sources of supply are likely to be large storage terminals and not necessarily the refineries themselves. The dealers would not be able to determine the source of the crude oil that was used to produce the refined fuel. Ultimately, the same refineries in the bulk program are also supplying the fuels in the direct delivery program, through the same commercial distribution system.

In fact, for fuel purchased in Canada, DESC would not have any alternate source for some products. Since half of all Canadian crude comes from oil sands, all Canadian refined fuel is likely to have been refined from some Canadian oil sands crude. The chart below shows how much fuel DoD purchased in Canada in FY 2008. The fuel under the Canadian contract was to support the North American Aerospace Defense Command in the Arctic Circle. The other purchases were made at Canadian commercial airports by military pilots. If DoD pilots were not permitted to purchase aviation fuels containing some fuel refined from oil sands crude, they would have to cease flying into Canadian commercial airports because all sources of supply in Canada likely contain some oil sands crude.

FY08 Canada Fuel	Gallons
RIK/FEA Purchases*	3,664,491
Canada Contract	2,009,005
AIRCard®	3,484,260
Total	9,157,756

*The Replacement in Kind (RIK)/ Fuel Exchange Agreement (FEA) is an International Agreement between DoD and Canada.

Based on all the above information, purchases of conventional petroleum products are not covered by Section 526 because DESC is purchasing commercially available fuels, consistent with acquisition policy. The amount of oil sands crude mixed with conventional crude oil is not substantial and is part of the normal crude oil distribution systems.

As noted above, DESC contracts do not target any particular source of crude oil nor do they specify that the refined products must be produced from oil sands crude oil. The DESC contracts do not direct or reimburse the contractor for any refinery changes or upgrade to permit the refining of oil sands crude. Even where the amount of oil sands in the fuel could be more than incidental, such as in Canada, so long as DESC does not target or specify oil sands as the source of crude and so long as the fuels are commercially available, then these products should be considered outside the purview of Section 526.²⁰ In addition, because it is almost impossible to purchase fuel which contains no Canadian oil sands as its crude source, attempting to exclude oil sands crude

from purchases of refined products would increase costs and compromise readiness by eliminating needed sources of supply.

IV. Synthetic fuels

A. Background

Synthetic fuels are generally considered to be fuels produced from non petroleum feedstocks such as coal, natural gas or biomass, or a combination thereof. Fuels produced by the Fischer-Tropsch (F-T) process using the above feedstocks are considered to be synthetic fuels, although there are other types of processes for making synthetic fuels.

There have been changes to the military specification for JP-8, to permit up to a 50-50 blend of F-T fuels with conventionally produced JP-8.²¹ The industry, through the Commercial Aviation Alternative Fuel Initiative (CAAFI), is moving to commercial acceptance of this fuel in revising its standards to permit this fuel to be used in commercial aircraft up to a 50-50 blend based on the military test program.

DESC has purchased F-T synthetic fuels to support the Air Force in its testing and certification program.²² These purchases of synthetic fuels were made from existing facilities overseas and were for 100% synthetic fuel, not the 50-50 blended product. Because the fuels have been used in the Air Force test and certification program solely for “research or testing,” they were not covered by Section 526.

DESC may also have purchased incidental amounts of synthetic fuels overseas through its into-plane and ships bunkers fuel contracts. Overseas, there are a few synthetic fuel facilities. One known example is that of SASOL in South Africa, which can produce synthetic fuel from coal and natural gas. This fuel is blended with commercial aviation fuel and is provided to Johannesburg International Airport in South Africa. This fuel may also be exported to other countries in the region. This fuel is generally available and meets the commercial specifications. Because fuel in these locations is provided from multiple suppliers, the exact source of fuel will vary on any given day. In order to avoid purchasing any amount of synthetic fuel, pilots and ship’s captains could not refuel in these locations and would be unable to carry out missions in those areas. As other overseas sources of synthetically derived fuel are developed, this is likely to happen more often in cases where DESC is purchasing the commercially available fuel in the marketplace.

The first operational synthetic fuel requirements are expected from the Air Force. The Air Force has a program to certify the entire Air Force fleet of aircraft to fly on a synthetic aviation fuel blend by early 2011, and is on track to meet this date. The Air Force goal is to use alternative fuel, a 50-50 blend of synthetic and conventional jet aviation fuel, for half of its requirements in the continental United States by 2016 and to require that the synthetic portion of the fuel be produced from a domestic source. The Army and Navy are also expected to conduct testing programs using synthetic fuels in the near term.

In order to meet these operational requirements, DESC will specifically contract for a 50-50 blend of synthetic and conventional jet aviation fuel and will specify that the facility producing the synthetic fuel product be a domestic source. DESC will not contract to build the synthetic fuel facility but will purchase the fuel on a gallon for gallon basis using routine contract procedures. However, the DESC contract will identify the specific location of the facility that will produce the synthetic portion of the fuel. The blended fuel will be required to meet the revised JP-8 specification, which will be consistent with the revised commercial ASTM specification.

B. Standard for measuring lifecycle GHG emissions for synthetic fuels

With synthetic fuels, there is likely to be great variability in the lifecycle GHG emissions from the fuels, depending on the feedstock, energy sources, land use impact, and production method. There will initially only be a few facilities producing this fuel due to the time and expense needed to build the synthetic fuel facilities. Thus the determination of the lifecycle GHG emissions will be based on the fuel produced from the specific facility identified under the DESC contract. The measurement will also cover both the “production and combustion of the fuel supplied under the contract” as required by Section 526. Once synthetic fuel is more widely available in the market, it may be possible to determine the GHG emissions for a class of facilities based on the inputs and outputs for that facility.

It is important to recognize that Section 526 imposes a restriction on contracting and by itself, does not require regulation of GHG emissions for all fuels produced. Therefore, there will be no regulatory model implementing Section 526 that DESC could rely on in its contracts for determining GHG emissions. Nor is there an existing widely accepted industry standard or model for measuring the lifecycle GHG emissions for alternative and synthetic fuels or for conventional petroleum products. However, there are numerous models being developed to measure the lifecycle GHG emissions of conventional petroleum and of synthetic fuels in order to compare the two. When DESC buys synthetic fuel for operational uses, DESC will work with the military services, EPA, DoE, and the scientific community to determine the best model or measurement method in order to ensure that the fuel purchased meets the requirements of Section 526. Appendix A contains an explanation of what is involved in measuring the lifecycle GHG emissions and a summary of the current work underway.

C. Contractual action to be taken with respect to synthetic fuels

All contracts for synthetic fuels and synthetic fuel blends will contain provisions to ensure that the lifecycle GHG emissions of the fuel purchased will be less than or equal to conventional petroleum products. These contracts will identify a model or measurement standard that the supplier must meet in order to be awarded the contract. DESC will require suppliers to demonstrate that they will comply with the identified standard or model at the time of award. The contract will also require the fuel produced to continue to meet or comply with the model or measurement standard during the life of the contract. DESC will make a written determination that the contract complies with

Section 526. The CI regarding Section 526 will provide a sufficient level of detail to ensure that contracts for synthetic fuel meet the requirements of Section 526. Each synthetic fuel contract will require legal review and approval by the DESC Senior Procurement Official. In cases where DESC might be purchasing incidental amounts of synthetic fuels in its commercial purchases, but is not specifically targeting or requiring synthetic fuels, these contracts will be considered as purchases of petroleum and will not be covered under Section 526.

V. Fuel card purchases: Fleet and AIRCard®

DESC has two fuel card purchase programs for Fleet and AIRCard®. Under the Fleet card program, DESC issues a task order under a General Services Administration (GSA) contract, to purchase fleet card services. DoD personnel use this card to purchase gasoline, diesel, E85 and biodiesel at commercial refueling stations for non tactical ground vehicles. The card functions the same as any personal credit card. With respect to the types of fuel purchased, it would be either alternative fuel such as E85 or B20, or conventional petroleum products such as gasoline or diesel fuel. As discussed above, the alternative fuels meet the lifecycle GHG emissions standards and the petroleum products are not covered.

The AIRCard® is issued to DoD pilots to purchase fuel around the world. At commercial airports where there is no DESC contract in place, the AIRCard® is used as a purchase card. The pilots are flying into those locations for operational reason and are purchasing whatever commercial aviation fuel is available. No alternative fuels are purchased under the AIRCard®. Although card purchases are a type of contract, they contain no terms and conditions. The fuel is pumped into the vehicle or plane and the card is presented as payment.

There is no other documentation except a receipt for fuel and a bill by the card company to the government. Therefore, there is no written contract which can specify that the fuel meet the Section 526 requirement. However, this program has a DoD Program Manager. The Program Manager can include in the guidance documents for the Fleet purchase card program that the E85 or B20 fuels purchased under the fleet cards comply with Section 526. Similarly, the guidance documents for the AIRCard® purchase program can note that since the pilots are purchasing only generally available commercial aviation fuel, these purchases would not be covered by Section 526.

VI. Exemptions

As discussed above, DESC will comply with the requirements of Section 526. The alternative fuels, E85 and B20, already meet the requirements, but they constitute only a small portion of the DESC fuel purchases. Conventional petroleum products, which are by far the largest amount of fuel purchased, are not covered by Section 526 based on present buying practices. Any new contract for synthetic fuels, including 50-50 blends, will be required to comply with Section 526 under this plan.

However, there are instances when DESC would need an exemption from Section 526 requirements for overseas purchases, contingencies, emergencies or sole source situations. The contracting regulations in the FAR recognize and contain procedures for exemptions to normal procurement practices. For example, micro purchases do not require any contract clauses. Purchases of commercial items under the simplified acquisition procedures allow the use of more streamlined procedures and certain laws are not applicable to these procurements. In addition, the FAR recognizes that emergencies and sole source buys require different procedures. Although Section 526 on its face applies to all contracts, it is reasonable to allow some exemptions, common under standard contracting procedures, in order to ensure operational readiness yet comply with the spirit and the intent of Section 526.

Therefore, this implementation plan authorizes the following exemptions to Section 526:

1. Purchases conducted under FAR and DFARS Part 13, Simplified Acquisition Procedures.
2. Sole source purchases justified in accordance with FAR Section 6.302-1.
3. Emergency purchases due to unusual and compelling urgency justified in accordance with FAR Section 6.302-2.
4. Purchases in which full and open competition is precluded by international agreement or treaty justified in accordance with FAR Section 6.302-4.
5. Purchases in which full and open competition is precluded due to national security reasons, FAR Section 6.302-6 or it is not in the public interest, FAR Section 6.302-7.
6. Purchases made overseas or in support of contingency operations.

Exemptions under item 1 are automatic if simplified acquisition procedures are used under Part 13 of the FAR. Exemptions 2-5 above must be justified in accordance with the general requirements of FAR Section 6.303. Exemptions under item 6 must be documented by a memorandum for the file. The CI regarding Section 526 will include these exemptions for purchases covered by Section 526. In addition, DESC will pursue the possibility of issuance of acquisition regulations under formal rulemaking to codify these exemptions.

End Notes

¹ On May 5, 2009, the EPA Administrator signed the Notice of Proposed Rule Making for the National Renewable Fuel Standard Program. <http://www.epa.gov/otaq/renewablefuels/420f09023.htm>

² The most commonly used definition of “Alternative Fuels” is found in the Energy Policy Act of 1992 (EPAct), Section 301(2), Pub. L. 102-486, Oct. 24, 1992, 42 USC Section 13211(2).

(2) the term ‘alternative fuel’ means methanol, denatured ethanol, and other alcohols; mixtures containing 85 percent or more (or such other percentage, but not less than 70 percent, as determined by the Secretary, by rule, to provide for requirements relating to cold start, safety, or vehicle functions) by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels; natural gas; liquefied petroleum gas; hydrogen; coal-derived liquid fuels; fuels (other than alcohol) derived from biological materials; electricity (including electricity from solar energy); and any other fuel the Secretary determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits.

³ The Federal Fleet Report is produced through the Federal Automotive Statistical Tool (FAST) for collecting fleet data from Federal executive agencies. FAST satisfies several reporting requirements of the Federal Government. Copies of the reports can be found on the GSA website at <http://www.gsa.gov/vehiclepolicy>.

⁴ See note 2.

⁵ In January 2001, the Biodiesel Final Rule, 10 CFR Part 490, made it possible for fleets to earn credits under the Energy Policy Act of 1992 for use of biodiesel blends of at least 20%. This rule does not make B20 (a 20% blend of biodiesel with diesel) an alternative fuel, but gives one credit for every 450 gallons of pure biodiesel used in biodiesel blends. This rule implements 42 U.S.C. § 13220, Biodiesel fuel use credits.

⁶ See Fiscal Year 2007 Report Federal Fleet Compliance with EPACT and E.O. 13423, published by DoE. http://www1.eere.energy.gov/femp/about/annual_reports.html

⁷ The EPA website refers to B20 as an alternative fuel.

“B20 and B100: Alternative Fuels

The interest in biodiesel as an alternative transportation fuel stems mainly from its renewable, domestic production; its safe, clean-burning properties; and its compatibility with existing diesel engines.

Biodiesel can be legally blended with petroleum diesel in any percentage. The percentages are designated as B20 for a blend containing 20% biodiesel and 80% petroleum diesel, B100 for 100% biodiesel, and so forth. B100 and blends of B20 or higher qualify for alternative fuel credits under the Energy Policy Act of 1992.

B20

Twenty percent biodiesel and 80% petroleum diesel—B20—is the most common biodiesel blend in the United States. Using B20 provides substantial benefits but avoids many of the cold-weather performance and material compatibility concerns associated with B100.

B20 can be used in nearly all diesel equipment and is compatible with most storage and distribution equipment. B20 and lower-level blends generally do not require engine modifications.

Not all diesel engine manufacturers cover biodiesel use in their warranties, however. See the National Biodiesel Board's Standards and Warranties page to learn more about engine warranties.

Because diesel engines are expensive, users should consult their vehicle and engine warranty statements before using biodiesel. It is similarly important to use biodiesel that meets prescribed quality standards—ASTM D6751-07b (see Biodiesel Production for more information on this standard).”

http://www.afdc.energy.gov/afdc/fuels/biodiesel_alternative.html

⁸ Alternative Fuels: E85 and Flex Fuel Vehicles, EPA420-F-06-047, October 2006, <http://www.epa.gov/smartway/growandgo/documents/factsheet-e85.htm>

⁹ Alternative Fuels: Biodiesel, EPA420-F-06-044, October 2006, <http://www.epa.gov/smartway/growandgo/documents/factsheet-biodiesel.htm>

¹⁰ See note 6, page 5.

¹¹ These contracts were not awarded solely for E85 and B20 but would likely contain requirements for other locations for other fuels such as diesel and gasoline.

¹² This number does not include fleet card purchases of 20,277 gallons of E85 and 45,329 gallons of B20 made in FY2008. These two types of fuels are also purchased through the GSA card program and presumably, are reflected in the Federal Fleet Report.

¹³ This document is found at <http://www.epa.gov/OMS/renewablefuels/420f07035.htm>.

¹⁴ See note 1. EPA Lifecycle Analysis of Greenhouse Gas Emissions from Renewable Fuels, EPA-420-F-09-024, May 2009. <http://www.epa.gov/otaq/renewablefuels/420f09024.htm>

¹⁵ EISA amended Section 211 of the Clean Air Act, 42 U.S.C. § 7545, to add new definitions of renewable fuel and to define the gasoline or diesel fuel baseline and lifecycle greenhouse gas emissions. Renewable fuel from new facilities (Dec 2007) must have GHG emissions at least 20% less than the baseline. Biomass-based diesel emissions must be at least 50% less than the baseline and cellulosic biofuel emissions must be at least 60% less than the baseline. See note 1 also.

¹⁶ See note 2.

¹⁷ ASTM D1655

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5. Materials and Manufacture

5.1 Aviation turbine fuel, except as otherwise specified in this specification, shall consist of refined hydrocarbons derived from conventional sources including crude oil, natural gas, liquid condensates, heavy oil, shale oil, and oil sands. The use of jet fuel blends, containing components from other sources are only permitted on a specific, individual basis.

JP-8 and JP-5

3. Requirements

3.1 Materials. The fuel supplied under this specification shall be refined hydrocarbon distillate fuel oils containing additives in accordance with 3.3. The feed stock from which the fuel is refined shall be crude oils derived from petroleum, tar sands, oil shale, or mixtures thereof.

¹⁸ The Glossary published by the Energy Information Agency, Department of Energy, uses the term unconventional instead of nonconventional.

1. Unconventional oil and natural gas production: An umbrella term for oil and natural gas that is produced by means that do not meet the criteria for conventional production. See **Conventional oil and natural gas production**. Note: What has qualified as “unconventional” at any particular time is a complex interactive function of resource characteristics, the available exploration and production technologies, the current economic environment, and the scale, frequency, and duration of production from the resource. Perceptions of these factors inevitably change over time and they often differ among users of the term. For these reasons, the scope of this term will be expressly stated in any EIA publication that uses it. For example, see *International Energy Outlook*, **Table E4** for the list it currently uses for unconventional oil and natural gas production. http://www.eia.doe.gov/glossary/glossary_u.htm. The International Energy Outlook, Table E4, includes the following definition. “Unconventional liquids include production from oil sands, ultra-heavy oils, gas-to-liquids technologies, coal-to-liquids technologies, biofuel technologies, and shale oil.”

The same glossary defines conventional oil as follows: “Conventional oil and natural gas production: Crude oil and natural gas that is produced by a well drilled into a geologic formation in which the reservoir and fluid characteristics permit the oil and natural gas to readily flow to the wellbore.”

¹⁹ EISA Section 526: Impacts on DESC Supply, LMI Report DES86TI, March 2009.

²⁰ This position is supported by Rep Henry Waxman in a letter to Senator Jeff Bingaman, dated March 17, 2008. Rep. Waxman stated that Section 526 should be interpreted in a manner that made sense consistent with federal contracting practices. “It was not intended to bar federal agencies from entering into contracts to purchase fuels that are generally available in the market, such as diesel or jet fuel, that may contain incidental amounts of fuel produced from nonconventional petroleum sources.” Rep Waxman went on to say the following:

Thus, section 526 would clearly apply to a contract that specifically requires the contractor to provide an alternative fuels, such as coal to-liquids fuels or a fuel produced from nonconventional petroleum source, such as fuel from tar sands. The provision also would apply to such a contract where the purpose of the contract is to obtain such an alternative fuel or fuel from a nonconventional petroleum source, even if the source of fuel is not explicitly identified in the contract. Similarly, a contract that supports or provides incentives for a refinery upgrade or expansion to allow a refinery to use or increase its use of tar sands oils would also be subject to section 526. This provision would not apply to contracts to purchase a generally available fuel, such as a specific diesel or jet fuel blend, if that fuel is not an alternative fuel or predominantly produced from an unconventional fuel source.

There have been several proposed amendments to § 526 which would create a statutory exception for fuel that is generally available so long as the purpose of the contract is not to target fuel produced from unconventional petroleum sources. See H. Amdt 274 to H.R. 2647, 110th Cong, § 3, Congressional Record H 7381-82, June 25, 2009; S. Amdt 1644 to S. 1390, 110th Cong, § 8, Congressional Record S 7718, July 20, 2009.

²¹ MIL-DTL-83133 (JP-8), dated April 11, 2008, DETAIL SPECIFICATION TURBINE FUEL, AVIATION, KEROSENE TYPE, JP-8 (NATO F-34), NATO F-35, and JP-8+100 (NATO F-37)

²² In early 2006, the Air Force purchased 100,000 gallons of synthetic fuel which was produced from natural gas from Syntroleum of Tulsa, OK. In June 2007, DESC purchased 281,000 gallons of synthetic fuel produced from natural gas from Shell. DESC recently awarded two additional contracts for synthetic fuel, both to SASOL in South Africa. The first contract was awarded on June 26, 2008 and was exclusively to support the Air Force for 60,000 gallons restricted to coal as the feed stock (referred to as coal to liquid or CTL). The second contract was awarded on July 3, 2008 for a one year requirement of 335,000 gallons.

Appendix A

Lifecycle Greenhouse Gas (GHG) Emissions

1.1 Background

Greenhouse Gas emissions (emissions) are those gaseous emissions directly associated with a particular operation, facility or organization and are longer lived than aerosol emissions which can also contribute to warming. Emissions can be inventoried, and to date, through voluntary initiatives such as the EPA Climate Leaders program, emission reduction goals have been set and emission reductions reported. Inventorying relies on the use of standards such as International Standard Organization (ISO) 14064-1 which provides guidance for inventorying relevant emissions of existing facilities/organizations, and ISO 14064-2, which provides guidance for inventorying relevant emissions associated with existing/proposed projects.

1.2 Greenhouse Gas Emissions

Typical GHGs are carbon dioxide, a product of fossil fuel combustion; methane, a by-product of fossil fuel production, animal waste and many natural processes; and nitrous oxide, a product of high temperature combustion processes in the presence of air. Less common, but even more potent, GHGs include a range of refrigerants.

All of these gases fall into the category of GHG emissions only after they are released to the atmosphere. An example of a release includes combustion of fossil fuels with no capture of combustion emissions; whether in a boiler, in an engine, or through open burning. Another example of release is leaks of industrial processing or co-product gases or volatile fluids. Another example is co-production of methane from crude oil wells where there is no access to a market for the methane gas (typically referred to as 'natural gas' when purified methane is used in our homes) where the co-produced methane is vented to the atmosphere. Because methane is many times more potent as a greenhouse gas than CO₂, crude oil produced by this method is associated with production of extraordinarily high greenhouse gas emissions even before the oil is consumed.

Nigerian oil production illustrates how assessment of GHG impact requires expansion of the scope of the assessment from measuring emissions only at a downstream (end user) facility, to measuring lifecycle GHG emissions associated with an energy production and energy usage pathway. The Department of Energy notes that vented methane gas released in conjunction with crude oil production multiplies the footprint for this category of crude oil production by a factor of 5 (128.6 kg CO₂e/bbl of crude oil produced versus emissions associated with crude oil production of 13-40 kg CO₂e/bbl of crude oil produced for most other major sources of crude.

(DOE/NETL Report 2009/1346 Table 2-3 accessible at:

<http://www.netl.doe.gov/energy-analyses/pubs/NETL%20LCA%20Petroleum-Based%20Fuels%20Nov%202008.pdf>).

In this context, a project that either captures natural gas for subsequent use, or even burns it on site would merit an extraordinarily high mark as a lifecycle emission reduction initiative. Similarly, any project that prevents leaks of natural gas into the atmosphere would also be significant from a lifecycle standpoint.

1.3 Lifecycle Greenhouse Gas Documents

Documents that uniquely address ‘Lifecycle’ Greenhouse Gas emissions include the United Kingdom specification PAS 2050:2008. This document can be accessed at: <http://www.bsi-global.com/en/Standards-and-Publications/How-we-can-help-you/Professional-Standards-Service/PAS-2050/> .

ISO 14040, also addresses the issue of interpreting the Greenhouse Gas emissions associated with the entire lifecycle. This includes the acquisition of raw material (for example, fossil crude oil exploration/production, bio-crude oil production, coal extraction, etc.), transport (crude oil transport via pipelines, tankers, etc), liquid fuels production (conversion of natural gas to liquids via Fischer-Tropsch processing, conversion of bio-crude to liquid fuel via hydrotreating, conversion of vegetable oils to Fatty Acid Methyl Esters via esterification process conducted at a biodiesel plant), finished product transport (via refined product pipelines, as well as via tank truck, barge and marine tanker) and equipment operations (actual combustion of fuels in diesel engines, gas turbine engines, etc.).

Examples of Lifecycle Stages

<i>Energy Production Pathway</i>	Crude Oil to Diesel (Well-to-Wheels)	Soybeans to Diesel (Field-to-Wheels)	Algae to Green Diesel
<i>Lifecycle Step</i>			
#1 Raw Material Acquisition	Exploration	<u>Agriculture</u> Site/soil Preparation (land use changes figure in here)	<u>Aquaculture</u> Site Preparation (land use changes figure in here)
	Well Development	Plant/Fertilize/ Irrigate	Cultivate/Fertilize (w CO2 & nutrients)
	Crude Oil Production	Harvest	De-watering
#1a Raw Material Acquisition (cont'd)		Bean crushing	Cell Wall Disruption
		Oil extraction	Oil extraction
		Co-product recovery	Co-product recovery
#2 Raw Material Transport	Crude oil to fuel production facility (truck/pipeline/storage facility/Strategic Petroleum Reserve/marine vessel)	Bio-oil to fuel production facility	Bio-oil to fuel production facility
#3 Liquid Fuels Production	Product Separation (Atmospheric Distillation)	Alkali Refining / Trans-esterification	Hydrotreating
	Product Separation (Vacuum Distillation)	Methyl Ester Purification	Product Separation (Atmospheric Distillation)
	Cracking/Hydrotreating	Blending w/ conventional diesel	
#4 Finished Fuel Transport & Refueling	Finished Fuel to terminals/pipelines/ refueling sites	Finished Fuel to terminals/ refueling sites	Finished Fuel to terminals/pipelines/ refueling sites
#5 Vehicle (Aircraft) operation	Compression Ignition Engine Combustion (gas turbine engine combustion)	Compression Ignition Engine Combustion (gas turbine engine combustion)	Compression Ignition Engine Combustion (gas turbine engine combustion)

Crops that are grown to provide the bio-oils suitable for refining are cultivated using land that might otherwise be used by carbon “sinks” that consist of forest land. Each tree contains a calculable amount of sequestered carbon dioxide. The diversion of these lands to crop production can result in a negative impact on the lifecycle GHG ‘footprint’ of a fuel production pathway.

Biologically derived raw materials that are used as a component in liquid fuel production can also introduce a significant advantage. The carbon that is incorporated into plant structures is largely derived from carbon dioxide present in the atmosphere and that carbon does not “count” as a greenhouse gas emission when it is later converted to carbon dioxide. It is not new carbon (in the form of carbon dioxide) being placed in the atmosphere; rather, it is carbon originally present in the atmosphere being recycled back to the atmosphere with no net change.

1.4 Government Initiative to Devise Rules & Tools for Assessing Lifecycle Greenhouse Gas ‘Footprint’ of Fuels (particularly Aviation)

The Air Force took the lead in establishing the Aviation Fuel Life Cycle Assessment Working Group which is composed of members from government agencies, universities and companies. This working group is developing additional guidance on how to evaluate the lifecycle footprint associated with fuel production pathways. The goal is to improve the understanding of how the information is gathered and the quality of the information provided to decision-makers as complex life cycle models of emissions begin to be used in regulatory and contractual activities. This effort, spurred by the EISA 2007 Section 526 language, requires that alternative “mobility” fuel have a lifecycle footprint less than or equal to the lifecycle footprint applicable to conventional petroleum production from fossil hydrocarbons. Published results of this effort are anticipated in the summer of 2009. Suppliers will use established models to estimate greenhouse gases as opposed to actual measurement of emissions.

An example of the issues that could complicate assignment of a lifecycle footprint for the production of an alternative bio-fuel is that a number of processes for bio-fuel production co-produce more than one useful product. A process might co-produce liquid fuel, and bio-mass. The latter can be employed for energy production through direct/indirect combustion, animal feed, or nutraceutical production. It is conceivable that the bio-mass co-product could be more valuable than the fuel that is derived from the crop. The question then arises as to how the emissions associated with the entire process are to be allocated against the two or more useful products. Does the product with greater value take the greater share of the GHG footprint? This is the approach taken in the most recent lifecycle GHG assessment document (PAS 2050, cited above).

Due to the complexity of the subject, a number of organizations are also supporting this “Rules & Tools” development effort. A conservative approach may be to look at co-products resulting from the alternative fuel production process from both an economic perspective and a mass-balance perspective. This would help to ensure that the economic assumptions are well documented.

1.4.1 Offsets

Some GHG assessment documents recognize offsets. The use of offsets to support a determination of supplier responsibility (Section 526 compliance) must be well documented. Offsets could potentially be documented as sub-contract arrangements to provide alternative fuel with renewable energy that offsets some of the nonrenewable production emissions.

1.4.2 Exclusions

GHG Emissions Impact of Constructing an Alternative Fuels Production Facility. For the purposes of assessing compliance with Section 526, one approach that places conventional petroleum on a comparable footing with alternative fuel production pathways is to exclude the emissions associated with construction of the fuel production facility. This is consistent with the manner in which the domestic conventional petroleum baseline is constructed, namely excluding the GHG impact of building conventional refineries.

1.4.3 EPA Parallel Effort

The Environmental Protection Agency (EPA) is making specific assessments of lifecycle GHG footprints for a range of bio-fuels in the context of the Renewable Fuels Standard. These bio-fuel categories include current and/or near-term technologies, such as conventional ethanol derived from corn or diesel derived from soy beans. These fuels must achieve a 20% reduction in lifecycle GHG footprint versus conventional petroleum-derived fuel. Mid-term technologies include renewable diesel and biomass-derived diesel which must achieve a 50% reduction in lifecycle GHG footprint versus conventional petroleum based fuel. Cellulosic bio-fuels have been given a requirement to achieve 60% reductions in lifecycle GHG impact. The Renewable Fuels Standard specifies that suppliers must include increasing proportions of each renewable fuel category in the product slate that they offer.

The EPA is comparing bio-fuels with conventional gasoline and diesel produced in 2005. EPA has recognized that no single model captures all of the interactions associated with estimating lifecycle GHG emissions for renewable fuels. Therefore, per the notice of proposed rulemaking, EPA is adopting an approach using the best tools available for each specific component of the lifecycle to create a comprehensive estimate of GHG emissions change.